

# Cards shuffling

[English](#)

[Tiếng Việt](#)

"Phú ông" has a card deck consists of  $n$  cards. He writes on each card a number from 1 to  $n$  from the top to the bottom of the deck.

Then he does shuffle the card deck several times, each time is described by  $S(i, j)$  meaning: pull out the  $i^{\text{th}}$  card then put it on the  $j^{\text{th}}$  of the remaining cards ( $1 \leq i, j \leq n$ ). If  $j = n$ , the  $i^{\text{th}}$  card will be the bottom card of the new one.

For example ( $n=6$ ):

$$(1, \boxed{2}, 3, 4, 5, 6) \xrightarrow{S(2,3)} (1, 3, \boxed{2}, 4, 5, 6)$$

$$(\boxed{1}, 3, 2, 4, 5, 6) \xrightarrow{S(1,2)} (3, \boxed{1}, 2, 4, 5, 6)$$

$$(3, 1, 2, \boxed{4}, 5, 6) \xrightarrow{S(4,5)} (3, 1, 2, 5, \boxed{4}, 6)$$

$$(\boxed{3}, 1, 2, 5, 4, 6) \xrightarrow{S(1,6)} (1, 2, 5, 4, 6, \boxed{3})$$

Afer  $x$  times of shuffling, "Phú ông" gives "Bờm" the card deck and chanllenges him to make it into the original order. Please help "Bờm"!

## Input

- The first line contains two integer  $n, x$ .
- Next  $x$  line(s), the  $p^{\text{th}}$  line contains two integer  $i_p, j_p$  describing the  $p^{\text{th}}$  time of shuffling ( $S(i_p, j_p)$ ).

## Output

- A single integer means the minimal number of times of shuffling the card deck to help "Bờm".

## Example

**Input:**

```
6 4
2 3
1 2
4 5
1 6
```

**Output:**

```
2
```

## Limitations

- $1 \leq n, x \leq 10^5$ .